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AMENDMENT TO THE CLAIMS

1. (Currently amended) A method of processing a digital image corresponding to a scanned document, the method comprising:

analyzing the image to obtain statistical data; and

deriving background noise removal data for the entire image based on the statistical data. [;]

~~storing the entire image and the background noise removal data, [and]~~
~~the stored data available for batch processing; and~~

~~providing user selection to:~~

~~in a first case, use the stored image and the stored data to remove~~
~~background noise from the image prior to rendering the image; and~~

~~in a second case, to bypass background noise removal in the~~
~~stored image prior to rendering.~~

2. (Previously presented) The method as described in Claim 1 further comprising pre-processing the image while analyzing the image and using intermediate results obtained from pre-processing the image to obtain the statistical data.

3. (Previously presented) The method as described in Claim 1 wherein the background noise removal data includes a tonemap function or sampled values of the tonemap function .

4. (Currently amended) The method as described in Claim [1] 22 wherein the image and the background noise removal data are stored together.

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5.   (Currently amended) The method as described in Claim 1 wherein analyzing the image [data] further comprises estimating a global background tone value.

6.   (Previously presented) The method as described in Claim 5 wherein the background noise removal data is derived from the global background tone value.

7. (Cancelled)

8. (Currently amended) The method as described in Claim [1] 22 further comprising providing a user interface including an option allowing the selection of background noise removal on a page-by-page basis.

9.   (Withdrawn) A method of estimating tone background in a digital image, the method comprising:
        generating edge-metrics for each pixel of the digital image;
        generating a first luminance histogram of all pixels in the image;
        using the edge-metrics to generate a second luminance histogram of pixels near edges; and
        estimating background luminance from the first and second histograms.

10. (Withdrawn) The method as described in Claim 9
        wherein for each pixel a first one of the edge-metrics is computed, the first edge-metric corresponding to the difference between the minimum and maximum values of neighboring pixels, and a pixel is tagged as an edge if its first edge-metric is above an adaptive threshold;
        wherein for each pixel a second one of the edge-metrics is computed in proportional to the difference between the mean of the neighborhood minimum and maximum value, and one of the pixel value or smoothed pixel value, a pixel

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tagged as belonging to a light side or dark side of an edge according to its second edge-metric; and

wherein the pixels tagged as belonging to a light sight of an edge are used to generate the edge-luminance histogram.

11. (Withdrawn) The method as described in Claim 9 wherein estimating the background luminance includes obtaining minimum error threshold values from the histograms and weighting the threshold values.

12. (Withdrawn) The method as described in Claim 9 wherein performing the background removal includes bleaching all pixel values having a luminance that is more than the estimated background luminance.

13. (Cancelled)

14. (Previously presented) The method as described in Claim 1 wherein the image is color-converted to a luminance-chrominance color space prior to obtaining the statistical data, and wherein the statistical data is obtained from the luminance channel.

15. (Currently amended) A system for processing a digital image corresponding to a scanned document, the system comprising:

statistical analyzer for analyzing the image to obtain statistical data;

function derivator for deriving background removal data for the image based on the statistical data; and

data storage for storing the image and the background removal data together.

~~whereby background removal can be performed on the digital image before and after rendering.~~

16. (Previously presented) The method of claim 1 wherein the statistical data and the background noise removal data are obtained in real time, as the document is being scanned.

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17. (Previously presented) The system as described in Claim 15 wherein the statistical analyzer pre-processes the image while analyzing the image and uses intermediate results obtained from pre-processing the image to obtain the statistical data.

18. (Previously presented) The system as described in Claim 15 wherein the background removal data includes a tonemap function or sampled values of the tonemap function.

19. (Previously presented) The system as described in Claim 15 further comprising a user interface for allowing viewing of a rendering of image data dependent on the user selection.

20. (Previously presented) The system as described in Claim 15 further comprising a user interface including an option allowing the selection of background noise removal on a page-by-page basis.

21. (Withdrawn) Apparatus for estimating tone background in a digital image, the apparatus comprising:

    means for generating edge-metrics for each pixel of the digital image;

    means for generating a first luminance histogram of all pixels in the image;

    means for using the edge-metrics to generate a second luminance histogram of pixels near edges; and

    means for estimating background luminance from the first and second histograms.

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22. (New) The method of claim 1, further comprising

   storing the entire image and the background noise removal data, the
   stored image and the stored data made available for interactive
   processing; and

   providing user selection to interactively:

           in a first case, use the stored image and the stored data to
       remove background noise from the stored image prior to rendering
       the stored image; and
           in a second case, bypass background noise removal in the
       stored image prior to rendering the stored image;
   wherein the user selection allows the stored image to be displayed with
   and without background noise removed.

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